

Preliminary remarks:

The specification is being amended to add section heading consistent with MPEP §608.01(a) et seq. No new matter has been added.

The claims have not been amended to distinguish over the cited art. They have, however, been amended to avoid indefiniteness issues. If there are any remaining semantics issues with the claim language, applicants are desirous of discussing those issues with the Examiner.

In support of the outstanding 35 USC §103(a) rejections, Tichenor (US 4,187,534) is relied upon for showing a one-piece support (3) [sic 34] and a method of making a one piece support portion, the support portion having circular recesses (1 - 6) for mounting a plurality of wave-modifying elements (lenses 30, 32) which cover openings [not identified by numeral] in the recesses.

Scobey (US 5,859,717) is relied upon for two mutually parallel surfaces (12, 14) having two holes (30) optically connected by a passage (no reference numeral identified) to one hole (20) on the other surface.

1) Tichenor (US 4,187,534) shows a stage spotlight with selectable "beam spreads". His spotlight has two housing portions: a lens carrying housing portion (34) and a lamp reflector housing (44) attached to the back of the lens housing (34) at a reduced neck (34). See Fig. 2.

The lens carrying housing portion (34) is split longitudinally into two symmetrical halves of identical castings. See Fig. 3 for one half of the castings which form the cylindrically shaped housing portion (34). Lenses (30, 32) are mounted in any one of six lens holding grooves (1, 2, 3, 4, 5, 6). The purpose for the smaller, focal, rear lens (32) is to focus the light from the lamp (20) to fill the surface of the front, larger, objective lens (30). The position of the front lens affects the beam "spread" from the spotlight.

Referring to Fig. 3, the practicality of the matter is that the smaller, rear lens (32) can selectively be mounted only in one of the two smaller diameter grooves (1, 2); and the larger,

front, objective lens (30) can selectively be mounted in only one of the four larger diameter slots (3,4, 5, 6). The two halves 34 are made of lightweight cast aluminium and screwed together with clamp bars (50) after the lenses are assembled in the grooves. The grooves (1- 6) are formed into the housing casting and have a solid groove bottom and groove side walls.

Besides providing a selectable "beam spread", Tichenor is concerned with "heat", i.e., heat build-up. To avoid heat issues he makes his smaller focal lens (32) as thin as possible. He also places air venting, elongate slots (60) through the housing (34) wall in each half casting between the small and large lens possible positions, i.e., between the first and second annular grooves. He places a second set of air venting, elongate slots (62) through the housing (34) wall in each half casting between the third and fourth annular grooves. He expressly states that these slots are for air cooling. See col. 3, lines 54-60.

In order to protect a stage hand from getting burned, he places a solid cylindrical shroud (42) about the assembled housing to extend over the entire length of the lens supporting housing (34) and to cover all of the venting elongate slots (60, 62).

Four fins (43) are placed between the inside of the heat shield shroud (42) and the outside of the assembled lens supporting housing (34). These fins run longitudinally along the housing and form air ducts. The purpose of these air ducts is to vent the hot air coming out of the slots (60, 62) to the atmosphere. Referring to Fig. 2, one fin/air duct (4) connects the upper vent slots (60, 62) to the outside; while a second fin/air duct (4) connects the lower slots (60, 62) to the outside. This is for each half casting (34), for a total of four air ducts (4).

However, Tichenor does not teach nor suggest, nor is there a need, to connect the slots (60, 62) on one-half of the housing (34) to the slots on the other half of the housing (34). In fact, to do so would change the straight-through path for the air flow and thereby reduce the cooling efficiency of the Tichenor design. The Tichenor air ducts, formed by the fins are not through bores. They do not extend through the housing walls. These fin-formed ducts are entirely exterior to the housing (34).

While Tichenor does show a support housing for holding two lenses with lens support grooves, and the housing halves extend in parallel, the annular lens receiving grooves are transverse to the length of the housing. The lens receiving grooves do not have any openings. The only openings in the Tichenor housing are explicitly disclosed to be the vent openings (60, 62) in the walls of the housing, i.e., the Tichenor lens support structure. However, the slotted openings (60, 62) are not connected together by a through bore. Moreover, with the lenses (30, 32) in place, some of the slotted openings are isolated from the others.

2) Sobey (US 5,589,717) teaches a fiber optical multiplexer having a precision (precisely manufactured) optical block.

An optical multiplexer combines (or separates – demultiplexes) optical signals in wave division multiplexes (WDM) fiber optic telecommunication systems.

An optical block is a structure in a multi-port or multi-channel optical system that supports the components to perform the optical multiplexing. An optical block may be either a solid optical substrate, such as glass or fused silica or otherwise, or an enclosed chamber which is hollow, i.e., filled with air or another optical transparent medium, wherein the enclosed chamber transmits the light. An optical block usually has an optical port (optical slot) for passing multiple wavelength collimated light.

A collimator is an optical device that transmits parallel rays of light, i.e., acts as a receiving lens. An optical filter separates light into different wavelengths. Transmission filters can transmit light of a specific wavelength and reflect light of other wavelengths.

For a further explanation, reference is had to an earlier Scobey patent, Scobey, US patent 5,583,683, columns 1- 3. An optical block shown in the '683 patent appears to be a solid block of optically transmissive material.

3) The reliance upon Scobey (US 5,859,717) for two mutually parallel surfaces (12, 14) having two holes (30) optically connected by a passage (no reference numeral identified) to one hole (20) on the other surface is misplaced.

Scobey teaches a optical multiplexer for a fiber optic transmission system in two embodiments -- Figs. 2,3,5, 10 showing a first embodiment -- Fig. 9 showing a second embodiment. The difference between the embodiments is the number of channels being multiplexed. With the first embodiment, it is up to five channels; and with the second embodiment, it is up to three channels.

The Scobey device has a two-piece housing with an upper (54) and lower (56) portions. The floor (top face 60) of the lower housing portion holds the fiber optic lines in place. The connection/ multiplexing device is an optical block (2) which is identical in both embodiments. This optical block has an adjusting screw (64) which allows the block to be pivoted through an angle "c" for adjusting the operation of the device. The fiber optic lines (4, 26, 48) terminate in individual collimators (6, 24, 46) which are each glued (72) to the surface (60) of the lower portion.

The optical block (2) is a one-piece housing made of non-transparent material, such as a ceramic (e.g. alumina) or a metal (stainless steel, aluminium). Extending through the block (2) is a single opening, i.e., the optical slot (10), which appears to have an oval cross-section and defines an opening, i.e., the optical port (16), on a first (side) face (12) of the block (2) and an opposite opening, i.e. the optical port (18), on the opposite (side) face (14) of the block (2). Attached to a first (side) surface (12) over the opening face (16) is a pair of interference filters (32) in alignment with the beam paths of the collimators (46) and the collimators (34). Attached to a second (opposite side) surface (14) over the opening face (18) is of optical filters (20) in alignment with the beam paths of the collimators (34).

Port 30 is the "face" of an interference filter (32). The interference filter face (30) passes certain light frequencies (col. 9, lines 40- 43) and reflects other frequencies not in-band (col. 54- 55). The two interference filters (32) and the two filters (20) are solid objects built up from layers of materials. There is no air gap, nor an air opening at the face (30) of

an interference filter (32). None of the Scobey elements (20), (30), or (32) are "holes". Nor do they constitute an "opening". The only openings shown by Scobey are opening (16) and the opening (18) on a first and opposite sides of the single slot (10).

In the Specification:

At page 1, line 6, before the text insert the heading:

Background of the Invention

At page 2, line 24, before the paragraph beginning with "*Therefore, taking that state of the art as its basic starting point ...*" insert the heading:

Summary of the Invention

At page 7, line 8, before the paragraph beginning as "*Further advantages, features and possible uses ...*" insert the heading:

Brief Description of the Drawings

At page 7, line 31, before the paragraph beginning as "Figure ia shows a first embodiment of a support ..." insert the heading:

Detailed Description of the Invention

No new matter has been added.